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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,774	05/26/2005	Tatsuru Shirafuji	MOR-4	5144
47888 7590 10/10/2007 HEDMAN & COSTIGAN P.C. 1185 AVENUE OF THE AMERICAS NEW YORK, NY 10036			EXAMINER FORD, KENISHA V	
			ART UNIT 4137	PAPER NUMBER
			MAIL DATE 10/10/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/536,774

Applicant(s)

SHIRAFUJI ET AL.

Examiner

Kenisha V. Ford

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-12 is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5/26/2005
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- ☐ Notice of Informal Patent Application
- ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoshino et al. (US Pub. 2004/0006249 A1).

Regarding claim 1, Hoshino et al. discloses a method for manufacturing a fluorocarbon film including:

- A film formation step for introducing a mixed gas comprising a first and second carbon fluoride gas on a substrate inside a chamber (pg. 3, para. 30; pg. 4, para. 35; pg. 8, para. 171, lines 1-3)
- Depositing a fluorocarbon film on said substrate (pg. 8, para. 172, lines 3-9)
- A step for forming voids in the fluorocarbon film by removing volatile components (pg. 3, para. 22, lines 3-9; pg. 5, para. 77, lines 5-10)

Regarding claim 5, Hoshino et al. discloses a method wherein the

Regarding claim 6, Hoshino et al. discloses a method wherein the step for forming voids includes heating the fluorocarbon film (pg. 7, para. 165).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2,3,4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoshino et al. (US Pub. 2004/0006249 A1) in view of Kobayashi et al. (US Pub. 2006/0264059 A1).

Hoshino et al. discloses a method for manufacturing a fluorocarbon film including:

- A film formation step for introducing a mixed gas comprising a first and second carbon fluoride gas on a substrate inside a chamber (pg. 3, para. 30; pg. 4, para. 35; pg. 8, para. 171, lines 1-3)
- Depositing a fluorocarbon film on said substrate (pg. 8, para. 172, lines 3-9)
- A step for forming voids in the fluorocarbon film by removing volatile components (pg. 3, para. 22, lines 3-9; pg. 5, para 77, lines 5-10).

Hoshino et al. does not teach that the first carbon fluoride gas is octafluorocyclopentene with 4 to 5 carbon atoms and the second carbon fluoride gas is hexafluorobenzene with 6 to 12 carbon atoms. However, Kobayashi et al. does disclose these very limitations.

Regarding claim 2, Kobayashi et al. teaches that the carbon fluoride compound used for the gas has a carbon number between 2 to 7 (pg. 5, para. 66, lines 1-5) which is included in the desired ranges 4-5 and 6-12 carbon atoms.

Regarding claim 3, Kobayashi et al. teaches that the first carbon fluoride gas is octafluorocyclopentene (pg. 5, para. 66; lines 16-19).

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Regarding claim 4, Kobayashi et al. teaches that the second carbon fluoride gas is hexafluorobenzene (pg. 5, para. 66, lines 21-27).

Regarding claim 8, based on the definition of high and low volatility given in the specification (pg. 5, para. 98), Kobayashi et al. discloses a method wherein the first carbon fluoride gas is octafluorocyclopentene and of high volatility and the second carbon fluoride gas is hexafluorobenzene and of low volatility (pg. 5, para. 98).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kobayashi et al. in the device of Hoshino et al. to manufacture a fluorocarbon film created by combining two carbon fluoride gases in order to enhance the thermal stability of the film (pg. 4, para. 53, lines 17-22).

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoshino et al. (US Pub. 2004/0006249 A1) in view of Tsai et al. (US Pub. 2004/00161946 A1).

Hoshino et al. discloses a method for manufacturing a fluorocarbon film including:

- A film formation step for introducing a mixed gas comprising a first and second carbon fluoride gas on a substrate inside a chamber (pg. 3, para. 30; pg. 4, para. 35; pg. 8, para. 171, lines 1-3)
- Depositing a fluorocarbon film on said substrate (pg. 8, para. 172, lines 3-9)
- A step for forming voids in the fluorocarbon film by removing volatile components (pg. 3, para. 22, lines 3-9; pg. 5, para. 77, lines 5-10).

Hoshino et al. does not teach that the chamber is a plasma-exciting chamber that can internally generate plasma.

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However, Tsai et al. discloses a plasma chamber that has at least one plasma source that is used to generate plasma energy (pg. 3, para. 29-31).

Therefore, it would have been obvious at the time the invention was made to combine the teachings of Tsai et al. in the device of Hoshino et al. in order to generate plasma inside the chamber so that the entire process can be performed in the reaction chamber in order to control the pressure (pg. 3, para. 28, lines 1-3).

Allowable Subject Matter

6. Claims 9-12 are allowed. The following is a statement of reasons for the indication of allowable subject matter: prior art does not teach a fluorocarbon film with a large number of voids and an inductive capacity of 2 or less.

Hoshino et al. (US 2004/006249 A1) teaches a method for forming a fluorocarbon film with voids, but does not teach that the film has a specific inductive capacity of 2 or less.

Endo (US 6,429,518 B1) discloses a method for forming a fluorine-added carbon film where the lowest inductive capacity obtained is around 2.6 but does not have any voids or pores.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenisha V. Ford whose telephone number is (571) 270-3328. The examiner can normally be reached on Monday-Thursday 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on (571) 272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KVF


AKM ULLAH
SUPERVISORY PATENT EXAMINER